

DaimlerChrysler AG

Patent Claims

- 5 1. A driving step selection device for an automatic transmission of a motor vehicle, which has
- an actuator (electric motor 13),
 - a drive element (18),
 - a driven element (30),
 - 10 - at least one actuation element (selection slide 39) and
 - an emergency actuation device (44),
- and in which
- the actuator (electric motor 13) is drive-
15 connected, in normal operation, to the actuation element (selection slide 39) via the drive element (18) and the driven element (30), for the predetermination of a driving step of the automatic transmission,
 - 20 - the forces or torques acting between the drive element (18) and the driven element (30) are limited by predeterminable force or torque limit values,
 - in emergency operation, said drive connection is
25 released, so that a relative movement between the drive element (18) and the driven element (30) occurs, and
 - in emergency operation, the emergency actuation
30 device (44) exerts on the driven element (30) forces or torques which are higher than said force or torque limit values,
- characterized in that forces or torques can be transmitted, in accordance with the actuator (electric motor 13), between the drive element (18) and the
35 driven element (30) directly after emergency actuation of the driving step selection device (10).

2. The driving step selection device as claimed in

claim 1, characterized in that

- a driving step "P" can be set by means of the driving step selection device (10), and
- a parking lock can consequently be engaged by means of the driven element (30).

3. The driving step selection device as claimed in claim 2, characterized in that

- the driving step selection device (10) has two actuation directions,
- the force or torque limit values for the two actuation directions are different, and
- the force or torque limit value in one actuation direction is higher than the maximum force or the maximum torque which can be applied by means of the emergency actuation device (44).

4. The driving step selection device as claimed in claim 2, characterized in that only the driving step "P" can be engaged by means of the emergency actuation device (44).

5. The driving step selection device as claimed in claim 4, characterized in that the driving step selection device (110) has an emergency release device (157), by means of which the driving step "P" can be disengaged.

6. The driving step selection device as claimed in claim 1, characterized in that the emergency actuation device (10) and/or the emergency release device (157) can be actuated by a vehicle driver who is in a place provided for him.

7. The driving step selection device as claimed in claim 4, characterized in that the emergency actuation device (110, 210) and/or the emergency release device (157) have/has an energy accumulator (helical spring

153, 160; pressure accumulator 275) which can be triggered by the vehicle driver and/or by means of a trigger actuator (electromagnet 144; valve 276).

5 8. The driving step selection device as claimed in claim 7, characterized in that the energy accumulator (275) is designed as a pneumatic or hydraulic pressure accumulator.

10 9. The driving step selection device as claimed in claim 1, characterized in that

- the drive element (18) has a mainly circular inner contour (21),
- the driven element (30) has a mainly circular outer contour, and
- 15 - the drive element (18) at least partially surrounds the driven element (30).

10. The driving step selection device as claimed in claim 1, characterized in that the position of the driven element (30) can be detected by a control device (12) by means of a position sensor (40).

11. The driving step selection device as claimed in claim 1, characterized in that the driving step selection device (10) has

- at least one blocking bolt (23) which
 - has a basic body (24) and
 - a tooth (26), and
 - 30 - at least one spring element (spring 32) which acts upon the blocking bolt (23),
- the force or torque being capable of being transmitted from the drive element (18) to the driven element (30) by means of the blocking bolt (23).

35

12. The driving step selection device as claimed in claim 11, characterized in that

- the driven element (30) has at least one recess

(29), in which the blocking bolt (23) and the spring element (spring 32) are arranged, and
- the drive element (18) has a tothing (internal tothing 22) on the inner contour (21),
5 the tooth (26) of the blocking bolt (23) engaging into the tothing (internal tothing 22).

13. The driving step selection device as claimed in claim 12, characterized in that the tooth (26) of the
10 blocking bolt (23)

- has two flanks (27, 28),
-- in each case one flank (27, 28) lying in the force flux during the transmission of the force or of the torque in one actuation direction in
15 each case, and

- the flanks (27, 28) have different angles of inclination (α , β) with respect to the basic body (24).

20 14. The driving step selection device as claimed in claim 1, characterized in that the drive element (18) is produced in one piece with an element of the actuator.